WIND RIVER IRRIGATION PROJECT, RAY CANAL-MILL CREEK DIVERSION CHECK STRUCTURE
(Little Wind River Unit)
Wind River Indian Reservation
Fort Washakie vicinity
Fremont County
Wyoming

HAER WY-95-D
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
INTERMOUNTAIN REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
12795 West Alameda Parkway
Denver, CO 80228

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HAER No. WY-95-D

I. INTRODUCTION

Location:	The Ray Canal-Mill Creek Diversion Check Structure lies along the Little Wind River where Mill Creek crosses the Ray Canal and is approximately six miles south of the town of Fort Washakie, Wyoming. The structure is located within the Little Wind River Unit, Wind River Irrigation Project, Wind River Indian Reservation, Fremont County, Wyoming.
Quad:	Ray Lake, Wyoming
UTM:	Zone: 12; Easting 674684; Northing 4756191
Date of Construction:	1911
Present Owners:	United States Government
Present Use:	The Ray Canal-Mill Creek Diversion Check Structure is a wasteway-check structure and functions as originally intended.
Significance:	The Ray Canal was the first irrigation canal authorized by the U.S. Government on the Wind River Indian Reservation in the late nineteenth century. Constructed in 1911, the Ray Canal-Mill Creek Diversion Check structure is the largest reinforced concrete structure constructed in the early years of the Wind River Irrigation Project within the Wind River Indian Reservation.
Historian:	Joan L. Brownell Billings, MT January 2009

II. HISTORY

In 1894, the U.S. Government granted the first authorized expenditure for irrigation construction on the Wind River Indian Reservation. This expenditure resulted in the construction of the Ray Canal (today a component of the Little Wind River Unit). By 1895, the Ray Canal extended for 10 miles. After 1895, several other efforts to construct irrigation ditches on the reservation were attempted but never completed. The Act of March 3, 1905, known as the McLaughlin Treaty, provided initial funding for the Wind River Irrigation Project. In October 1905, work began on an extension of the original Ray Canal but frozen ground delayed construction. This construction project did not resume until 1909.[1]

The Ray Canal-Mill Creek Diversion Check Structure was completed in 1911 at a cost of $2,245.23. In 1916, Engineer Wilbur Hanna identified this diversion structure as the largest reinforced concrete structure on the Wind River Irrigation Project. According to Hanna, the structure "had to be constructed in the most substantial manner to take care of frequent cloud-bursts that occur in the Mill Creek drainage above where the structure is placed."[2]

The Ray Canal is part of the Little Wind River Unit, the largest irrigation unit within the Wind River Irrigation Project. The Ray Canal diverts water from the South Fork, Little Wind River and also receives water from Ray Lake and Washakie Reservoir. The Ray Canal is one of four main canals within the Little Wind River Unit. In 1939 the Little Wind River Unit had 47 miles of main canals, 206 miles of laterals and irrigated a total of 17, 614 acres of both Indian and non-Indian lands. By 1968, the Little Wind River Unit consisted of nearly 295 miles in length of existing main canals, laterals and sublaterals.[3]

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[1] Blain Fandrich, *The Wind River Irrigation Project: A Class 1 Overview of Irrigation on the Wind River Reservation, Fremont County, Wyoming*, Prepared for Cooper Zietz Engineers by Ethnoscience, Inc., Billings, MT, 2007, 8-9, 10-11.

[2] Wilbur S. Hanna, *Project History, Wind River Irrigation Project, Wyoming*, Indian Irrigation Service, on file, Rocky Mountain Region Library, Bureau of Indian Affairs, Billings, MT, 1916, 15.

[3] Henry Clotts, *Wind River Irrigation Project History and Irrigation Data*, manuscript on file, Rocky Mountain Region, Bureau of Indian Affairs, Billings, MT, 1939,14-15; Fandrich, *Wind River Irrigation Project*, 14; United States Department of the Interior, Bureau of Indian Affairs, *Wind River Irrigation Project Wyoming 1968*, Billings Area Office, Billings, MT, 1968, 50.

III. ARCHITECTURAL DESCRIPTION

The Ray Canal-Mill Creek Diversion Check Structure is a large combination wasteway-check structure on the Ray Canal within the Little Wind River Unit, Wind River Irrigation Project on the Wind River Indian Reservation (Figure 1). Mill Creek enters Ray Canal from the south approximately 120 feet upstream from this structure. Mill Creek exits Ray Canal at this structure to the north.

The Ray Canal-Mill Creek Diversion Check Structure discharges into the natural channel of Mill Creek. The wasteway, historically called a waste gate, is a protective structure that diverts or wastes excess canal water flow and prevents water from continuing downstream in the canal. The wasteway is a three-bay gated structure that adjusts the water flow. These 4'-0" wide waste gates are supported by concrete buttresses that exhibit embedded vertical slots or grooves for the insertion of stoplogs (check boards). Stoplogs are long rectangular boards that are placed manually on top of each other and dropped into the slots inside the gate. Timber beams bolted to the top of the buttresses serve as railings and a wood deck bridge provides access to the stoplogs.

The wasteway is connected to the check gate by a 4'-0" concrete wall placed at a 45 degree angle between the structures. The check is a regulating structure that regulates the canal water surface and controls downstream flow. The check gate is composed of three slide gates, being vertical lift gates with threaded gate stem and operating wheel. These gates check the flow of water and divert water from the canal into the Mill Creek channel. Four rectangular concrete columns that stand 8'-0" in height support the iron framing of the three slide gates. Four concrete piers 1'-0" wide and approximately 17'-0" long allow for the passage of water to continue within the canal. The outer piers are larger than the two central piers. All piers are broken and leaning. An approximately 15' wood plank deck bridge caps the check structure and is collapsing and presently unusable.

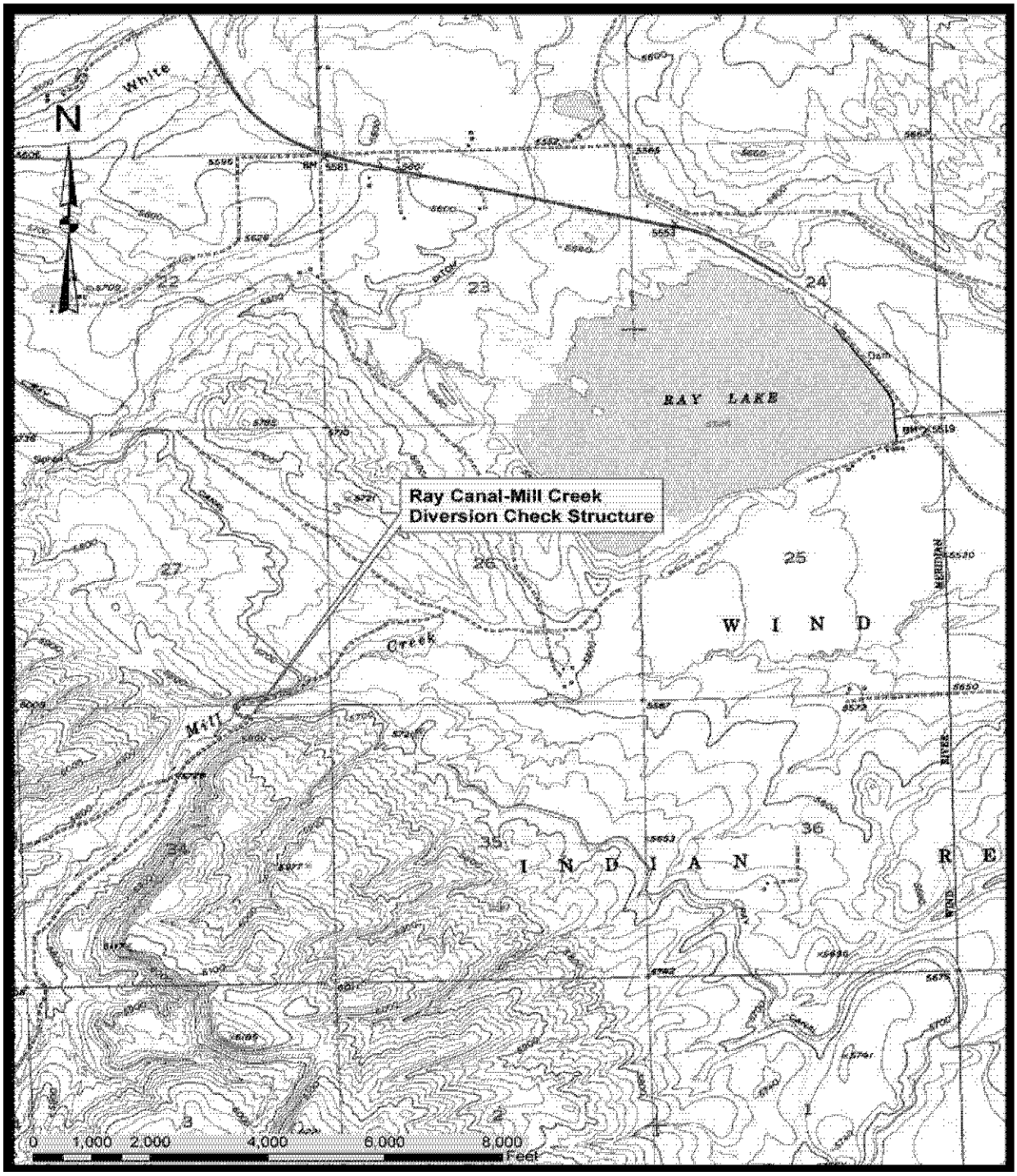

Figure 1. Ray Canal-Mill Creek Diversion Check Structure location.

IV. MODIFICATIONS

It is possible that modifications to the Ray Canal-Mill Creek Diversion Check Structure have occurred since its construction in 1911. However, there is no available record of any modifications. Routine maintenance and repairs have also been ongoing.

V. OWNERSHIP AND FUTURE

The U.S. Government has maintained ownership of the Ray Canal-Mill Creek Diversion Check Structure within the Little Wind River Unit, Wind River Irrigation Project, since its construction.

The rehabilitation of the Ray Canal-Mill Creek Diversion Check Structure is part of the BIA Irrigation Rehabilitation effort addressing major operation and maintenance problems on the Wind River Irrigation Project. This is a multi-year project with plans to return various irrigation systems throughout the Rocky Mountain Region to fully functioning systems.

The rehabilitation of the Ray Canal-Mill Creek Diversion Check Structure will significantly affect the original design of the diversion while retaining its original function. The check structure across Ray Canal will be demolished and replaced with a box culvert and raised canal bank. The existing slide gates will be removed and replaced with new 3'-6" slide gates. The wasteway that controls water flow into Mill Creek will be demolished and replaced with baffled apron drop, slide gates and wing walls.

VI. BIBLIOGRAPHY

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